UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,703	01/16/2002	Sang-Bom Kang	9898-207	1366

20575 7590 10/12/2006

MARGER JOHNSON & MCCOLLOM, P.C.
210 SW MORRISON STREET, SUITE 400
PORTLAND, OR 97204

EXAMINER
ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,703	KANG ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-27,33-37 and 41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,9 and 20* is/are rejected.

7)☒ Claim(s) *2-8,11-19,21-27,32-37 and 41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20060928* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Kinnard; David W. et al. (US 6,635,117 B1). Kinnard teaches a shower head (54/154; Figure 1,3,5; column 5, lines 35-65) for supplying a reaction gas to a wafer (18; Figure 1; column 3, lines 37-46) in a process chamber (16/116; Figure 1,3; column 5, lines 35-65), the shower head (54/154; Figure 1,3,5; column 5, lines 35-65): comprising circular plates (154, 157; Figure 3), each of the circular plates (154, 157; Figure 3) arranged substantially parallel to each other in a vertically stacked arrangement, each of the circular plates (154, 157; Figure 3) having substantially the same diameter, each of the circular plates (154, 157; Figure 3) including gas paths (175, 176) for supplying a reaction gas to the process chamber (16/116; Figure 1,3; column 5, lines 35-65), a lower one (157; Figure 3) of the circular plates (154, 157; Figure 3) including cooling lines cooling lines (180; Figure 5; column 6, lines 45-54), coolant inlets (182; Figure 3; column 6, lines 22-29), and coolant outlets (186; Figure 3; column 6, lines 22-29), each of the cooling lines (180; Figure 5; column 6, lines 45-54) connecting one of the coolant inlets (182; Figure 3; column 6, lines 22-29) to one of the coolant outlets (186; Figure 3; column 6, lines 22-29), as claimed by claimed 1

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinnard; David W. et al. (US 6,635,117 B1) in view of Heimanson; Dorian et al. (US 5,775,416 A). Kinnard is discussed above. Kinnard further teaches an apparatus for forming a thin film, said apparatus comprising: a process chamber (16/116; Figure 1,3; column 5, lines 35-65); a heater stage (20; Figure 1; column 3, lines 35-46) located in a lower portion of the process chamber (16/116; Figure 1,3; column 5, lines 35-65), said heater stage (20; Figure 1; column 3, lines 35-46) configured to support a wafer (18; Figure 1; column 3, lines 37-46) and to heat the wafer (18; Figure 1; column 3, lines 37-46) to a high temperature; a shower head (54/154; Figure 1,3,5; column 5, lines 35-65) located in an upper portion of the process chamber (16/116; Figure 1,3; column 5, lines 35-65), said shower head (54/154; Figure 1,3,5; column 5, lines 35-65) configured to supply a reaction gas to the wafer (18; Figure 1; column 3, lines 37-46) - claim 9

Kinnard further teaches:

i. An apparatus for forming a thin film, said apparatus comprising: a process chamber (16/116; Figure 1,3; column 5, lines 35-65); a heater stage (20; Figure 1; column 3, lines 35-46) arranged in a lower portion of the process chamber (16/116; Figure 1,3; column 5, lines 35-65) and configured to support a wafer (18; Figure 1; column 3, lines 37-46) and to heat the wafer (18; Figure 1; column 3, lines 37-46) to a high temperature; a shower head (54/154; Figure 1,3,5; column 5, lines 35-65) disposed in an upper portion of the process chamber (16/116; Figure 1,3; column 5, lines 35-65) and configured to supply a reaction gas to the wafer (18; Figure 1; column 3, lines 37-46), said shower head (54/154; Figure 1,3,5; column 5, lines 35-65) comprising a plurality of plates (155, 154; Figure 3; column 5, lines 35-50) having a plurality of gas paths formed therein and a shower head

(54/154; Figure 1,3,5; column 5, lines 35-65) cooling system (180; Figure 3; column 5, lines 35-50) arranged in a lower plate (154; Figure 3; column 5, lines 35-50); said cooling system (180; Figure 3; column 5, lines 35-50) comprising a plurality of coolant inlets (182; Figure 3; column 6, lines 22-29), a plurality of coolant outlets (186; Figure 3; column 6, lines 22-29), and a plurality of independent inner cooling lines (180; Figure 5; column 6, lines 45-54) for connecting each of the coolant inlets (182; Figure 3; column 6, lines 22-29) to one of the coolant outlets (186; Figure 3; column 6, lines 22-29) – claim 20

Kinnard does not teach:

i. a separating device arranged between a bottom of the process chamber (16/116; Figure 1,3; column 5, lines 35-65) and a bottom of the heater stage (20; Figure 1; column 3, lines 35-46), said separating device configured to separate the heater stage (20; Figure 1; column 3, lines 35-46) from the bottom of the process chamber (16/116; Figure 1,3; column 5, lines 35-65) and to reduce a volume of processing space within the process chamber (16/116; Figure 1,3; column 5, lines 35-65) – claim 9

ii. a separating device arranged between the process chamber (16/116; Figure 1,3; column 5, lines 35-65) and the heater stage (20; Figure 1; column 3, lines 35-46) to separate a space beneath the heater stage (20; Figure 1; column 3, lines 35-46) from a process chamber (16/116; Figure 1,3; column 5, lines 35-65) space containing the wafer (18; Figure 1; column 3, lines 37-46) to reduce a process volume of the process chamber (16/116; Figure 1,3; column 5, lines 35-65) – claim 20

Heimanson teaches a plasma processing apparatus (Figure 1; column 2, line 64 – column 3, line 5) with integrated substrate control (column 1, line 65 – column 2, line 13). Heimanson further teaches:

iii. a separating device (36a; Figure 1; column 3, lines 50-60) arranged between a bottom of the process chamber (12; Figure 1; column 2, lines 64-68) and a bottom of the heater stage (26; Figure 1; column 3, lines 21-31), said separating device (36a; Figure 1; column 3, lines 50-60) configured to separate the heater stage (26; Figure 1; column 3, lines 21-31) from the bottom of the process chamber (12; Figure 1; column 2, lines 64-68) and to reduce a volume of processing space within the process chamber (12; Figure 1; column 2, lines 64-68) – claim 9, 20

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Kinnard's substrate support apparatus with Heimanson's substrate support apparatus with optimized dimension.

Motivation to replace Kinnard's substrate support apparatus with Heimanson's substrate support apparatus with optimized dimension is for influencing substarte temperature control by heating and cooling as taught by Heimanson (column 2; lines 22-35).

Allowable Subject Matter

5. Claims 2-8, 11-19, 21-27, 32-37, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The added structural limitations are nowhere taught or suggested in the Examiner's cited prior art.

Response to Arguments

7. Applicant's arguments filed July 24, 2006 have been fully considered but they are not persuasive.

8. The Examiner's new grounds of rejection (all based on Kinnard) as necesitated by the amended claims is detailed above. Applicant's amended depedent claims are found to contain allowable subject matter. With respect to arguments based on the applicant's dependent claims, the Examiner agrees and suggests an appropriate amendment to bring the pending claims into allowance.

Conclusion

9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

10/2/6